

Remarks/Arguments:

Drawings

The Examiner has objected to the drawings. In particular, the Examiner asserts that Figure 7 should include a "PRIOR ART" legend. The applicant respectfully notes that Figure 7 was amended in the February 1, 2006 Preliminary Amendment to include a —PRIOR ART— designation. Accordingly, the applicant respectfully requests that the objection to the drawings be withdrawn.

Rejections Under 35 U.S.C. § 112

The Examiner has rejected claim 4 for lack of enablement and indefiniteness under 35 U.S.C. § 112. Claim 4 has been canceled, rendering the Examiner's rejections moot.

Rejection Under 35 U.S.C. § 102 or, in the Alternative 35 U.S.C. § 103

The Examiner has rejected claims 1-3, 5-7 and 10 under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Jung (2002/0167105). It is respectfully submitted, however, that the claims are patentable over Jung for the reasons set forth below.

The Examiner states that paragraph 10 of Jung discloses a vacuum heat insulator with a glass wool core pressurized at a temperature higher than the strain temperature of the glass. The Examiner further states that paragraph 20 of Jung discloses a temperature high enough to allow deformation of the glass fibers but not high enough to excessively break the fibers.

Applicant's invention, as recited by claim 1 includes a feature which is neither disclosed nor suggested by the art of record, namely:

... a temperature at which the glass fibers start to deform due to own weight of the glass fibers; and

a temperature at which the glass fibers become deformable due to a vertical load in pressing and

sectional shapes of the glass fibers do not significantly vary

The claim features above refer to a specific temperature point for the vacuum heat insulator core. It is at this temperature that the core will have increased heat resistance and optimal high heat insulation performance.

Jung, in contrast, discloses a range of temperatures ("the Jung range"), not a temperature point. Jung states that the "temperature by which the thickness as the body can be maintained should be 400° C. or more which is 110° C. below the strain point of the glass white wool. Therefore, the lowest molding temperature should be larger than the temperature Of 110° C. below the strain point. However, it is desirable that the highest molding temperature is under 20° C. above the strain point in consideration of distortionn of the glass white wool." Jung at [0018].

This is different because heating the glass white wool at the upper temperatures in the Jung range may cause the sectional shapes of the glass fibers to significantly vary. When the sectional shapes of the glass fibers vary, a neck is formed between glass fibers, which reduces heat insulation performance. See Specification at 7:12-15. Heating the glass white wool at the lower temperatures in the Jung range will not permit the glass fibers to be drawn. Drawing fibers improves the lamination arrangement of the glass fibers, and so increased heat resistance between the glass fibers. See Specification at 8:8-15. It is because Applicant includes the specific temperature features that the advantages of increased heat resistance and high heat insulation performance are achieved. Accordingly, for the reasons set forth above, claim 1 is patentable over Jung. Claims 2-3 and 5-7 include all the features of claim 1 from which they depend. Thus, claims 2-3 and 5-7 are also patentable over Jung for the reasons set forth above. Claim 10, while not identical to claim 1, includes the temperature features of claim 1. Accordingly, claim 10 is also patentable over Jung for the reasons set forth above.

Rejection Under 35 U.S.C. § 103(a)

The Examiner has rejected claims 8 and 9 under 35 U.S.C. § 103(a) as unpatentable over Jung. Claim 8 includes all of the features of claim 1 from which it

depends. Thus, claim 8 is also patentable over Jung for the reasons set forth above. Claim 9, while not identical to claim 1, includes the temperature features of claim 1. Accordingly, claim 9 is also patentable over Jung for the reasons set forth above.

Rejection Under 35 U.S.C. § 102

The Examiner has rejected claims 1, 2, 4, 5, 9 and 10 under 35 U.S.C. § 102(b) as anticipated by Rusek (U.S. Patent No. 5,591,505). Claim 4 has been canceled, rendering the Examiner's rejection moot. It is respectfully submitted that claims 1, 2, 5, 9 and 10 are patentable over Rusek for the reasons set forth below.

The Examiner states that column 4, lines 48-57, column 5, lines 28-40 and column 6, lines 13-17 of Rusek disclose a vacuum heat insulator comprising a core of glass wool that contains binder and is encased in an envelope.

Applicant's invention, as recited by claim 1 includes a feature which is neither disclosed nor suggested by the art of record, namely:

. . . a shape of the core is kept by entanglement of parts
of the glass fibers instead of binding of the glass fibers.

The claim limitation above refers to a core that uses fiber entanglement to keep its shape. Rusek, in contrast, and as the Examiner has recognized, uses a binder to bind the glass fibers. This is different because the presence of binding material, as disclosed in Rusek, creates thermal cross-links which act as heat transfer points between the fibers. See Specification at 3:21 to 4:15. In addition, binding material may generate gas, which may lead to degradation. See Specification at 8:21-23. Moreover, manufacturers may avoid man hours necessary to add binder components. See Specification at 8:23-25.

It is because the Applicant uses fiber entanglement to keep the core shape, rather than a binder material, that the advantages of suppressing the amount of heat transfer via the absence of thermal cross-links, and consequent absence of heat transfer points, lack of degradation from gas generation, and reduced man hours, is achieved. Accordingly, for the reasons set forth above, claim 1 is patentable over Rusek. Claims 2 and 5 include all of the features of claim 1 from which they depend.

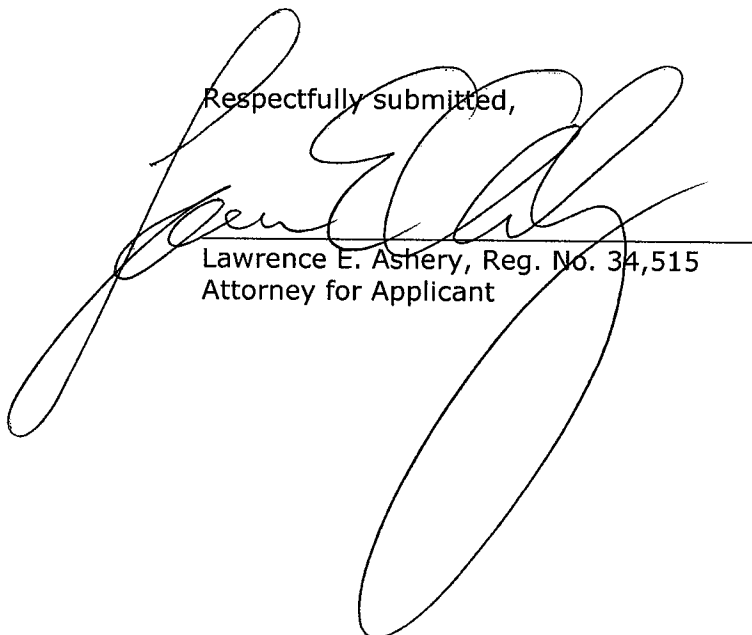
Appln. No.: 10/595,081
Amendment Dated: April 11, 2008
Reply to Office Action of: January 17, 2008

MAT-8798US

Thus, claims 2 and 5 are patentable over Rusek for the reasons set forth above. Claims 9 and 10, although not identical to claim 1, also use fiber entanglement rather than a binder to keep the shape of the core. Thus, claims 9 and 10 are patentable over Rusek for the reasons set forth above.

In view of the amendments and arguments set forth above, the above-identified application is in condition for allowance which action is respectfully requested.

Respectfully submitted,



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Dated: April 11, 2008

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